

CLAIMS

1. A molecular detection method comprising visualizing and identifying a chain molecule immobilized on a substrate by probing with a scanning probe microscope in solution.

5 2. The molecular detection method according to Claim 1, wherein the chain molecule immobilized on the substrate is an uprightly disposed single strand molecule.

10 3. The molecular detection method according to Claim 2, wherein the uprightly disposed single strand molecule is a nucleic acid, a peptide nucleic acid, a peptide, a glycopeptide, a protein, a glycoprotein, a polysaccharide, a synthetic polymer, or an analog thereof.

15 4. The molecular detection method according to Claim 1, wherein the chain molecule immobilized on the substrate is a multiple strand molecule comprising an uprightly disposed single strand molecule and at least one chain molecule that can bind to the single strand molecule.

20 5. The molecular detection method according to Claim 4, wherein the multiple strand molecule is a complex of one or more types of molecules selected from a nucleic acid, a peptide nucleic acid, a peptide, a glycopeptide, a protein, a glycoprotein, a polysaccharide, a synthetic polymer, or an analog thereof.

6. A molecular counting method comprising detecting a molecule by the method according to any one of Claims 1 to 5, and counting the number of detected chain molecules per unit area.

25 7. A molecular localization detection method comprising detecting a molecule by the method according to any one of Claims 1 to 5, and counting

the number of detected chain molecules per unit area, thus giving molecular localization information.

8. A molecular detection system for detecting a chain molecule immobilized on a substrate, the system comprising a jig for holding the substrate, a container housing the substrate and a solution, a probe, a probe detector, a drive mechanism for scanning the substrate or the probe in three dimensions, and a drive control circuit for controlling the drive mechanism.

9. The molecular detection system according to Claim 8, wherein it further comprises a device which visualizes the chain molecule.

10. 10. The molecular detection system according to either Claim 8 or 9, wherein it further comprises a device which counts the chain molecules.

11. 11. The molecular detection system according to any one of Claims 8 to 10, wherein it further comprises a device which provides information about localization of the chain molecules.

15. 12. The molecular detection system according to Claim 11, wherein it further comprises a device which discriminates between substrates with chain molecules immobilized thereon.

13. 13. The molecular detection system according to any one of Claims 8 to 12, wherein the chain molecule immobilized on the substrate is a single strand molecule uprightly disposed on the substrate.

14. 14. The molecular detection system according to Claim 13, wherein the uprightly disposed single strand molecule is a nucleic acid, a peptide nucleic acid, a peptide, a glycopeptide, a protein, a glycoprotein, a polysaccharide, a synthetic polymer, or an analog thereof.

25. 15. The molecular detection system according to any one of Claims 8 to 12, wherein the chain molecule immobilized on the substrate is a multiple

strand molecule comprising the uprightly disposed single strand molecule and at least one chain molecule that can bind to the single strand molecule.

16. The molecular detection system according to Claim 15, wherein the multiple strand molecule is a complex of one or more types of molecules
5 selected from a nucleic acid, a peptide nucleic acid, a peptide, a glycopeptide, a protein, a glycoprotein, a polysaccharide, a synthetic polymer, or an analog thereof.

17. A production process for a substrate with a chain molecule immobilized thereon, the production process including the method according to
10 any one of Claims 1 to 7.

18. A production process for a substrate with a chain molecule immobilized thereon, the production process employing the system according to any one of Claims 8 to 16.